

In re Patent Application of:

SHI ET AL

Serial No. **09/891,886**

Filed: **06/26/2001**

REMARKS

Claims 1-6, 8-10 and 12-18 are pending in this application.

Claims 1, 2 and 6 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Kitamura in view of Liu.

Claims 3, 4 and 5 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Kitamura in view of Liu as applied to claim 1 above, and further in view of Stockill.

Claims 8 to 10 and 12 to 18 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Kitamura in view of Liu as applied to claim 1 above, and further in view of Hessel.

Claims 1, 10, and 16 have been amended to overcome the objections of the Examiner and to better define the invention in light of the prior art.

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Response to arguments

The *Universal Test Meter for Digital Signal Distribution Systems* as disclosed in instant application provides a substantial advantage over prior art in that it can be applied to analyze signals in CATV and other digital networks operating under different digital standards, such as the European, North American and others. No alterations of the instrument are required to customize it to local conditions, since the standards are operator selectable.

Claims 1, 2, and 6, rejected under 35 U.S.C. 103(a) as being unpatentable over Kitamura in view of Liu., as set forth on pages 3-5 of the outstanding Office Action, are respectfully traversed.

Rejection of Claim 1

The Office Action alleges that instant invention would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains, based on the disclosure of Kitamura (U.S. Patent 4,303,944). The Office Action states on page 3 that:

"Kitamura discloses a test meter for a digital signal distribution system comprising:

a front end for acquiring a signal carried by the signal distribution system (column 1, lines 37-48; Note: a television is interpreted as being a simple test meter as a user will be able to determine the signal strength by observing the television output);"

Applicant believes this statement is not accurate on several counts and is not relevant to instant application for the reasons

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outlined below.

Firstly, Kitamura teaches an electronic device for producing tuning voltages as part of a television receiver, which could be applied to U.S. and European VHF television channels (Col. 1, lines 37-48; Col. 4 lines 12-15; Claim 1). It should be stressed, that the invention relates to only one aspect of the television receiver, namely selection of predetermined voltages for electronic tuning.

Secondly, Applicant does not agree with the proposed interpretation that television receivers are simple test meters. Typically, television receivers have only a video or picture output for visible observation by the user and an audio output for producing sound signals, which the user can hear. Conventional television receivers do not give the user any indication of the various parameters pertaining to the received television signal, such as signal strength, channel frequency detuning, signal noise, bandwidth or similar.

The provision of such parameters is normally associated with a test meter. The Examiner proposes that a television receiver can be used as a simple test meter for allowing the user to determine the signal strength by observing the television output. However, a user has no way of associating an observed degradation in picture or sound quality with a particular signal parameter, such as excessively low or high signal strength, channel cross-talk, frequency detuning, interference from external sources and similar. Kitamura himself makes no mention of "test meter" or "test instrument", nor does he imply that his invention can be used as one.

Furthermore, conventional television receivers have an automatic gain control (AGC) circuit, which adjusts the gain of

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internal amplifiers to maintain a substantially uniform amplifier output signal strength. An example can be seen in Kitamura, Fig. 2, where the electronic tuner 1 has a connection denoted "AGC". Another example appears in Liu (U. S. Pat. 6,222,891), col. 5 lines 24-27 and lines 44-46, as well as element 12 in Fig. 1.

As a result, the observed picture and sound output quality of the television receiver is rendered largely independent of the incoming television signal strength over a wide range of signal strengths. Thus, since a television receiver lacks the predictive and analytical capabilities of a test meter, there are no grounds for interpreting Kitamura's invention as a test meter as suggested in the Office Action.

In contrast, a test meter as claimed in Claim 1 of instant application is typically utilized in the art by a trained technician to measure and detect signal deterioration by suitable signal analysis before any picture or sound degradation can be observed by the television receiver user. To clarify and emphasize this difference, Claim 1 has been amended by the addition of the following clause:

"a means for analyzing parameters of the demodulated signal to produce an analysis output;"

The basis for this addition can be found in the description, specifically page 13, last two sentences of last paragraph:

"The test meter 30 analyzes the recovered digital information to obtain data such as MER, I/O data constellation, equalizer tap values, FEC readings, and the like that pertain to a digital television signal";

as well as page 18, last two sentences of second paragraph:

"Various parameters of the digital bit stream and/or

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the baseband signal may thus be analyzed. Analyzed results are provided as output 50";

and page 22, first paragraph:

"In addition, the digital demodulator 76 performs data acquisition in conjunction with the controller 78 to provide raw and analyzed data to the user interface 80. In one form, the digital demodulator and data acquisition 76 is performed by a universal QAM integrated circuit (IC or chip) such as a Broadcom BCM 3125. The user interface 80 allows the user to select the appropriate standards and/or formats in order for the test meter 60 to properly analyze various parameters of the digital television channel/signal".

A typographical error in Claim 1 has also been corrected by striking the word "decoding" from the phrase "plurality of digital demodulation decoding schemes".

To clarify the text of Claim 1, the word "a different" was substituted for the word "one" in the phrase "each signal conditioning circuit corresponding to ~~one~~ a different digital CATV standard in a plurality of digital CATV standards".

In Claim 1 of instant application, the claimed test instrument includes:

"a plurality of signal conditioning circuits, each signal conditioning circuit corresponding to one digital CATV standard in a plurality of digital CATV standards"

Careful reading of Kitamura reveals that his teaching is directed at a switching and tuning voltage circuit for interfacing an electronic tuner (reference number 1 in Figs. 1, 2 and 4) with

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an integrated switching circuit (reference number 20 in Figs. 2 and 4). The tuner circuit does not pass TV signals, so it cannot fulfill the signal conditioning circuit function claimed in instant application. Even if the four switches S1 - S4 (col. 1, lines 42-44; col. 2, lines 19-21) were to be construed as a plurality of circuits each corresponding to U.S. and European standards, they merely select the center frequencies of the sound IF, VHF and vertical deflection circuit. This selection function does not provide signal conditioning, nor an output of a digital channel signal, which is claimed in instant application.

Kitamura presents only a single band amplifier (reference number 2 in Fig. 1, prior art), which could be applied to signal conditioning. This contrasts with Claim 1 of instant application, which claims a plurality of signal conditioning circuits, each corresponding to one digital CATV standard. U.S. and European standards implement not only different channel center frequencies, but also different signal bandwidths, e.g. 6 MHz and 7-8MHz, respectively. While Kitamura refers to the different VHF channel center frequencies (Table 1, col. 1, lines 19-20) for U.S. and Europe, these comprise only a subset of CATV standards.

Another essential component of CATV standards is channel bandwidth. Kitamura's teaching is silent on bandwidth, nor does it describe how the bandwidth of the cited band amplifier should be modified to permit operation in accordance U.S. and European CATV standards.

Lastly, Claim 1 of instant application defines

"a user interface operative to allow a user to select the digital CATV standard".

Apparently in the view of the Examiner the four switches S1 -

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S4 (col. 2, lines 19-21) constitute a user interface. However there do not appear to be any grounds for this in Kitamura's disclosure, as he makes no mention of any user interface. Since a television receiver is a consumer item, it is normal practice to simplify the user controls to avoid confusion and to hinder the user from making any adjustments, which are not required in the normal day-to-day use of the appliance. It is more likely, that the switches would be set to local standards in the factory or in the store selling the appliance. The applicant therefore does not agree that the four switches can be considered as a user interface.

In summary, Kitamura's patent does not disclose, imply or direct toward a test meter with a plurality of signal conditioning circuits each corresponding to a CATV standard and having a user interface, all of which are claimed in Claim 1 of instant application.

In the Office Action, Liu et al. is said to disclose

"a test meter of Claim 1 wherein the CATV signals are digital (column 1, line 67; column 2, lines 1-8) and with a digital demodulator in communication with said signal conditioning circuitry and operative to select one demodulation scheme from a plurality of digital demodulation decoding schemes to obtain a demodulated signal from the digital channel signal after signal conditioning (column 5, lines 3-7)."

Clearly, Liu's invention is directed toward one aspect of digital data communication systems and methods for operating such systems, namely the synchronization of a receiver's timebase to a remote transmitter's (column 2, lines 11-14). Additionally, a combined 64/256-QAM and 8/16-VSB demodulator is disclosed (column 5, lines 3-5), referred to also as a dual mode QAM/VSB receiver

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(column 5, lines 21-22).

However, similarly to Kitamura's case, Liu does not disclose a means or method for adjusting the bandwidth of the incoming CATV signal in accordance with a CATV standard. Liu mentions bandwidth only in the context of the various phase-lock loops in his disclosure. In contrast, Claim 1 of instant application recites a plurality of signal conditioning circuits, each having a bandwidth set by the corresponding CATV standard.

For the same reasons as discussed previously, Liu's disclosed system with a front-end programmable gain amplifier (PGA) controlled by an on-chip gain recovery loop cannot function as a test meter. Notably, the means for performing CATV signal analysis and outputting the results pertaining to a test meter as claimed in the amended Claim 1 of instant application has no counterpart in Liu's disclosure.

Furthermore, a user interface operative to allow a user to select the digital CATV standard as claimed in Claim 1 of instant application is not taught by Liu. While the dual mode QAM/VSB receiver may be seen to imply some sort of selection of digital CATV standard, there is no indication that the selection is under control of the user. Typically, such a selection could be performed with jumpers in the factory. Alternatively, a host processor may select the standard according to some preprogrammed table (col. 7, lines 21-24) without user involvement.

Applicant concurs with Examiner that the motivation of both Kitamura and Liu would have been to create a television receiver capable of being sold in the United States and Europe. However, it is argued that such motivation teaches away from instant application, an object and motivation of which is a meter capable of measuring signal parameters on CATV systems used in the United

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States and Europe and producing an analysis thereof.

In conclusion, applicants respectfully submit that there are several substantial aspects of Claim 1 of the present application, which cannot be inferred from the disclosures of Kitamura and Liu. Hence Claim 1 cannot be deemed obvious.

Rejection of Claim 2

With respect to Claim 2, the Examiner expresses the view that Liu discloses a test meter of claim 1, wherein the plurality of digital CATV standards comprise ITU-T J.83 Annex A, Annex B, and Annex C (column 5, lines 9-10) and the plurality of digital demodulation decoding schemes comprise QAM and QAM variants (column 5, lines 3-7).

In fact, the integrated trellis and Reid-Solomon decoders (referred to in col. 5 lines 9-10), while supporting the Annex A/B/C coding formats, constitute only an incomplete part of the ITU-T J.83 standards. Similarly, the forward error correction (FEC) and decoder block is disclosed as being compatible with the Annex A/B/C CATV standard (Annex A/C: col. 6, lines 55-58; Annex B: col. 7, lines 1-3). However, the FEC decoder again represents only a part of the complete ITU-T J.83 standards.

Elsewhere in Liu's disclosure, components for only one standard at a time are presented, e.g. components associated with Annex B such as a 6MHz SAW filter to limit out-of-band energy (col. 5, lines 40-43), or the NTSC rejection filter (col. 9, lines 50-64; fig. 1, reference number 28; fig. 4, reference number 56). No means for switching between a plurality of such components is taught or implied. Thus, to a person with ordinary skill in the art at the time of the invention, this would imply that certain components of the system would need to be exchanged when switching from one ITU-T

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J.83 standard to another, while other components would not need to be exchanged.

This differs substantially from instant application, where Claim 2 recites a plurality of digital CATV standards comprising ITU-T J.83 Annex A, Annex B, and Annex C.

Thus Claim 2 would not be obvious to a person with ordinary skill in the art at the time of the invention

Rejection of Claim 6

Kitamura states that the television set is provided with four switches, of which one (S₃) is switched so as to select a television channel (col. 2, lines 19-25).

The same arguments apply as have been presented previously, that a television receiver is not capable of performing the functions of a test meter such as claimed in instant application. While Liu's disclosure includes a digital data communication system and methods for operating it, there is no mention of channel selection by a user, probably because the front end operates on an analog signal centered at standard IF frequencies (col. 4, lines 66-67; col. 5, line 1).

Thus Claim 6 cannot be deemed obvious from the disclosures of Kitamura and Liu.

Claims 3, 4, and 5, rejected under 35 U.S.C. 103(a) as being unpatentable over Kitamura in view of Liu, and further in view of Stockill, as set forth on pages 5-7 of the outstanding Office Action, are respectfully traversed.

Rejection of Claim 3

It was shown previously that the disclosures of Kitamura and

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Liu do not teach a test meter as claimed in Claim 1 of instant application.

In the Office Action, Stockill is said to disclose the test meter of Claim 1, wherein said plurality of signal conditioning circuits comprises a first filter that filters the acquired signal in accordance with a first CATV standard and a second filter that filters the acquired signal in accordance with a second CATV standard (column 4, lines 3-13).

However, Stockill does not disclose the digital demodulator operative to select one demodulation scheme from a plurality of digital demodulation decoding schemes, which is recited in Claim 1 of instant application. Neither does he provide for a means to analyze the digital signal and output analysis results, as is the case in the same Claim 1.

As Stockill's motivation appears to be the demodulation of low bandwidth digital teletext broadcast from satellites in the sub-carriers of the main television signal (col. 4, lines 54-59) rather than the demodulation of broad bandwidth digital CATV signals, he is seen as teaching away from the test meter claimed in Claims 1 and 3 of instant application.

Thus, at the time of the invention it would not have been obvious for one of ordinary skill in the art to add the parallel filtering taught by Stockill to the system claimed here.

Rejection of Claim 4

Contrary to the assertion of the Office Action, Liu does not disclose a test meter of Claim 3, wherein the first and second filters comprise SAW filters each according to its own digital CATV standard. As was pointed out previously, Liu discloses the use of a single SAW filter to limit out-of-band signal energy (col. 5, lines

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39-42). There is no suggestion or direction given for adding additional SAW filters, as the single SAW filter adequately fulfills the requirements for the dual mode QAM/VSB receiver of Fig. 1.

Since Claim 4 recites the presence of two SAW filters, it cannot be deemed obvious or be derived from the combined disclosures of Kitamura and Liu.

Rejection of Claim 5

While Liu gives recognition to the existence of two transmission mode standards, one defined by ITU-T J.83 Annex A/C for outside the U.S. and one defined by ITU-T J.83 Annex B for inside the U.S. (col. 1, lines 51-64), as well as a need for a television receiver system capable of demodulating a variety of modulation formats (col. 1, lines 65-67; col. 2, lines 1-3), he does not disclose a system where both above standards are implemented simultaneously and completely. As shown before, some parts of his disclosed system contain components, which are compatible with two or more of these standards.

Specifically in relation to the SAW filters, it was pointed out that only a single filter is disclosed (col. 5, lines 39-42), but this cannot be applied to two different standards. Claim 5 recites the use of at least two separate SAW filters, each according to its own ITU-T J.83 digital CATV standard.

Thus Claim 5 cannot be deemed obvious from the disclosures of Kitamura and Liu.

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Claims 8-10, and 12-18, rejected under 35 U.S.C. 103(a) as being unpatentable over Kitamura in view of Liu, and further in view of Hessel, as set forth on pages 8-9 of the outstanding Office Action, are respectfully traversed.

Rejection of Claim 8

It has been shown above that the disclosures of Kitamura and Liu do not teach a test meter as claimed in Claim 1 of instant application. Claim 8 is dependent on Claim 1 with an additional restriction that the user interface is operative to allow a user to select one digital modulation decoding scheme from a plurality thereof.

According to the Office Action, Hessel discloses the user interface recited in Claim 8 (column 4, lines 38-46).

Turning now to the cited description, Hessel states:

"FIG. 3 describes a field programmable radio frequency communications system that can be programmed by a user to form a digital signal processing system 10 that is adapted to be coupled to a radio frequency receiver and or transmitter subsystem 12 to configure a radio frequency receiver and/or transmitter system to operate with any of a plurality of radio frequency waveforms or signaling schemes, such as, AM, A3E, H3E, J3E, CW, SSB, M-PSK, QAM, ASK, and angular modulation, such as, FM, PM, FSK, CMP, MSK, CPFSK etc."

The motivation for Hessel's disclosure is to improve a radio performance through a refinement of carrier frequency estimate method, which is to various degrees dependent on the type of modulation and signaling used. The radio frequency waveforms or signaling schemes he lists are very general, many of which do not even apply to signals as used in a network such as digital CATV. In

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the absence of more specific teaching, his disclosure contains nothing that directs or suggests a preferred way for extending the capability of a digital CATV network analysis apparatus.

Furthermore, Hessel does not teach a plurality of signal conditioning circuits, each such circuit corresponding to one digital CATV standard, which is claimed in Claim 1 of instant application.

In the absence of more specifics, Claim 8 cannot be deemed obvious for one of ordinary skill in the art from the disclosures of Kitamura and Liu in view of Hessel.

Rejection of Claim 9

The disclosures of Kitamura and Liu were previously shown not teach a test meter as claimed in Claim 1 of instant application. Claim 9 is dependent on Claim 8, which in turn depends on Claim 1.

Although Liu discloses the demodulation of 64/256-QAM (col. 5, lines 3-7) that may be regarded as a plurality of digital demodulation schemes, he does not provide for a user interface operative to select one digital modulation decoding scheme, which is claimed in Claim 8 of instant application.

Therefore Claim 9 cannot be deemed obvious from the disclosures of Kitamura and Liu.

Rejection of Claims 10 and 16

The examiner has rejected Claims 10 and 16 on the same grounds as Claims 1 and 8.

The same arguments as used in defending Claim 1 apply also to Claims 10 and 16.

For the sake of more clearly distinguishing Claim 10 from

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prior art, the following amendment has been introduced:

"performing signal analysis on" has been inserted in the first sentence of Claim 10; and

"means for analyzing at least one parameter of the obtained digital CATV signal and presenting analysis results at an output" has been added at the end of Claim 10.

Similarly, the method of Claim 16 has been amended with the addition of the following steps:

"performing analysis on parameters associated with the demodulated signal"; and

"presenting results of the parameter analysis at an output".

The justification of these amendments can be found in the description of instant application and is the same as that presented in defense of Claim 1 above.

Applicant believes that with the above amendments, the grounds for rejection have been removed from Claims 10 and 16.

Rejection of Claim 12

The examiner has rejected Claim 12 on the same grounds as Claims 1.

As Claim 12 is dependent on Claim 10, it is believed that with introduced amendments the grounds for rejection of Claim 12 have also been removed.

Rejection of Claim 13

The examiner has rejected Claim 13 on the same grounds as Claims 3.

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Claim 13 is dependent on Claim 12, so it is believed that with introduced amendments to Claim 10 on which Claim 12 depends, the grounds for rejection of Claim 13 have also been removed.

Rejection of Claim 14 and 17

The examiner has rejected Claims 14 and 17 on the same grounds as Claim 5.

Since Claim 14 is dependent on Claim 10 via Claims 12 and 13, and amended Claim 10 was shown not to be obvious over Kitamura and Liu, it is believed that the grounds for rejection of Claim 14 have also been removed.

Claim 17 is dependent on the amended Claim 16 for which it is believed that the grounds for rejection have been removed.

Rejection of Claim 15 and 18

The examiner has rejected Claims 15 and 18 on the same grounds as Claim 9.

Claims 15 and 18, which claim QAM and QAM variants in the plurality of demodulation schemes, are dependent on Claims 10 and 16, respectively. The same arguments apply to them as for Claim 9 above. With the amendments introduced in Claims 10 and 16 it is believed that the grounds for rejection have been removed.

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Conclusion

Finally, in view of the foregoing demonstration of the failure of the cited prior art to disclose or suggest the various combinations of features of the invention claimed in the rejected claims, favorable reconsideration of this application, and a Notice of Allowability of all of Claims 1-6, 8-10 and 12-18 are respectfully requested.

Should any minor informalities need to be addressed, the Examiner is respectfully requested to contact the undersigned attorney at the telephone number listed below.

Please charge any shortage in fees due in connection with the filing of this paper, including Extension of Time fees, to Deposit Account No. 50-1465 and please credit any excess fees to such deposit account.

Respectfully submitted,



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